

# Setting the Stage for Sea Level Rise Planning

Delaware Sea Level Rise Advisory Committee

David Carter  
Delaware Coastal Programs  
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*Delaware's Sea Level Rise Initiative*

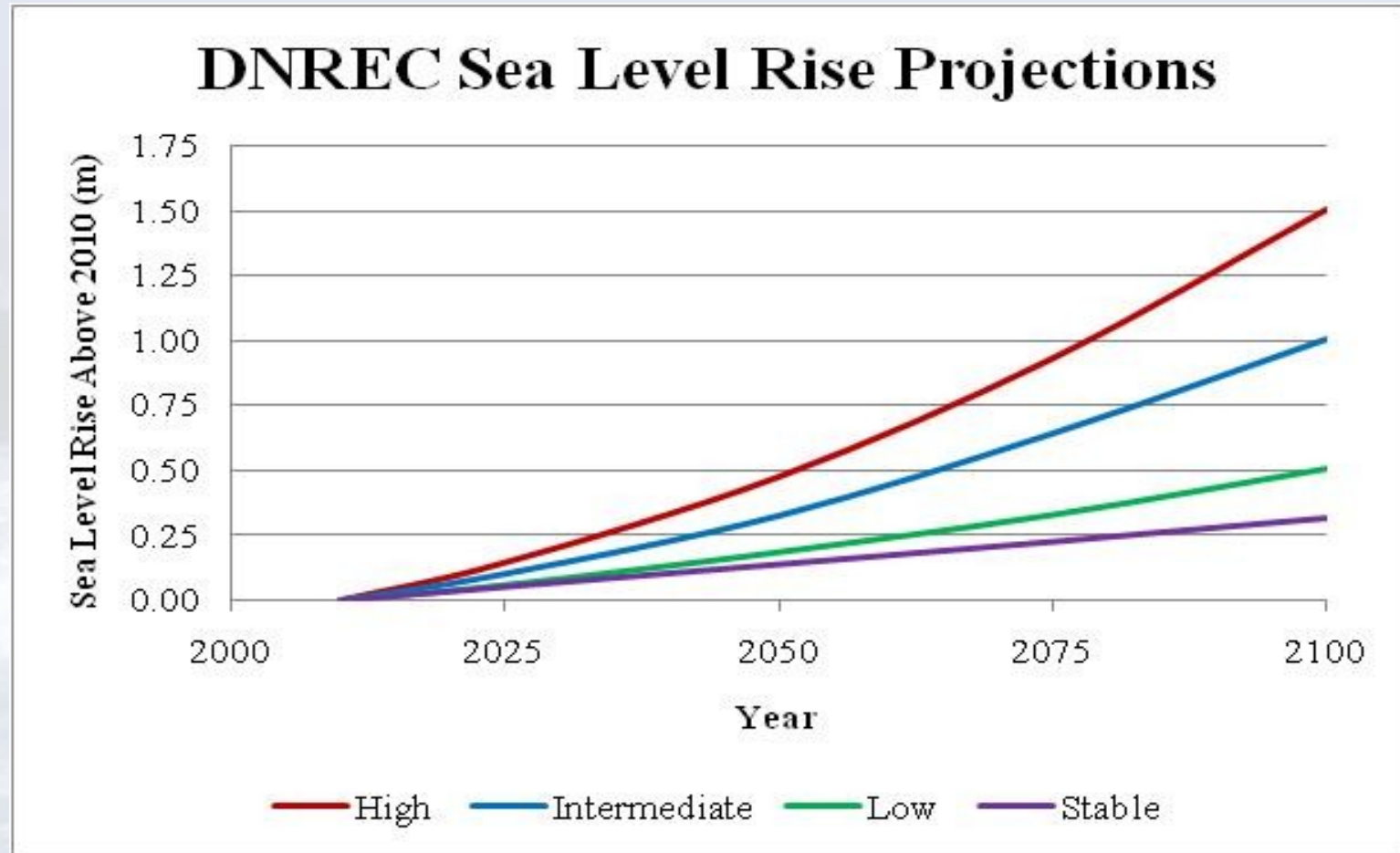


# Setting the Stage for Sea Level Rise Planning

- Overview of Potential Effects of Sea Level Rise
- Potential Sea Level Rise Vulnerabilities
- Address existing coastal flooding while better preparing for potential worse future problems.



# DNREC's Sea Level Rise Scenarios



# Impacts of Sea Level Rise

- Increased flooding
- Rising water table
- Wetland impacts
- Habitat impacts
- Economic & Social impacts





# Increased Flooding

- More severe flooding in flood prone areas
- New areas will become flood prone
- Detrimental Impacts to
  - ✓ Cropland and Working Farms
  - ✓ Roads and Infrastructure
  - ✓ Homes
  - ✓ Recreation and Tourism
  - ✓ Commercial and Industrial Areas



Route 299 in Odessa

# Rising Water Table

- Salt water intrusion
- Septic system failure
- Sewer treatment facility impacts
- Infrastructure instability





# Wetland Impacts

- Interior marsh drowning
- Loss due to landward migration limitations
- Increased flooding
- Breaching of Impoundments
- Invasive species



# Economic & Social Impacts

- Decrease in Crop Production
- Increased Infrastructure Costs
- Repetitive Flooding Losses and Increased Insurance Costs
- Industrial Facilities and Ports
- Loss of Open Space
- Impacts to Tourism
- Community Displacement





# Risk = Hazards x Vulnerabilities

## ■ Coastal Hazards

- ✓ Tropical Storms
- ✓ Sea Level Rise
- ✓ Chronic Flooding
- ✓ Storm Surge
- ✓ Coastal Erosion
- ✓ Coastal Resource Degradation

## ■ Vulnerabilities

- ✓ Low-Lying Land
- ✓ Population Density and Demographics
- ✓ Emergency/Critical Facilities
- ✓ Tourism
- ✓ Evacuation Planning
- ✓ Ecological Resource
- ✓ Human Health

# Coastal Resiliency Planning

- Community Driven Process
- Information, Tools, and Support

## Pilot Studies

- Bowers Beach
- New Castle
- Leipsic (Requested)



# Coastal Resiliency Action Plans

## Town of Bowers Beach



*DNREC - Shoreline & Waterway Section*



*Delaware's Sea Level Rise Initiative*





# Town of Bowers Beach at Mean Higher High Water





# Town of Bowers Beach at 1.5 ft of sea level rise





# Town of Bowers Beach at 3 ft of sea level rise





# Town of Bowers Beach at 5 ft of sea level rise





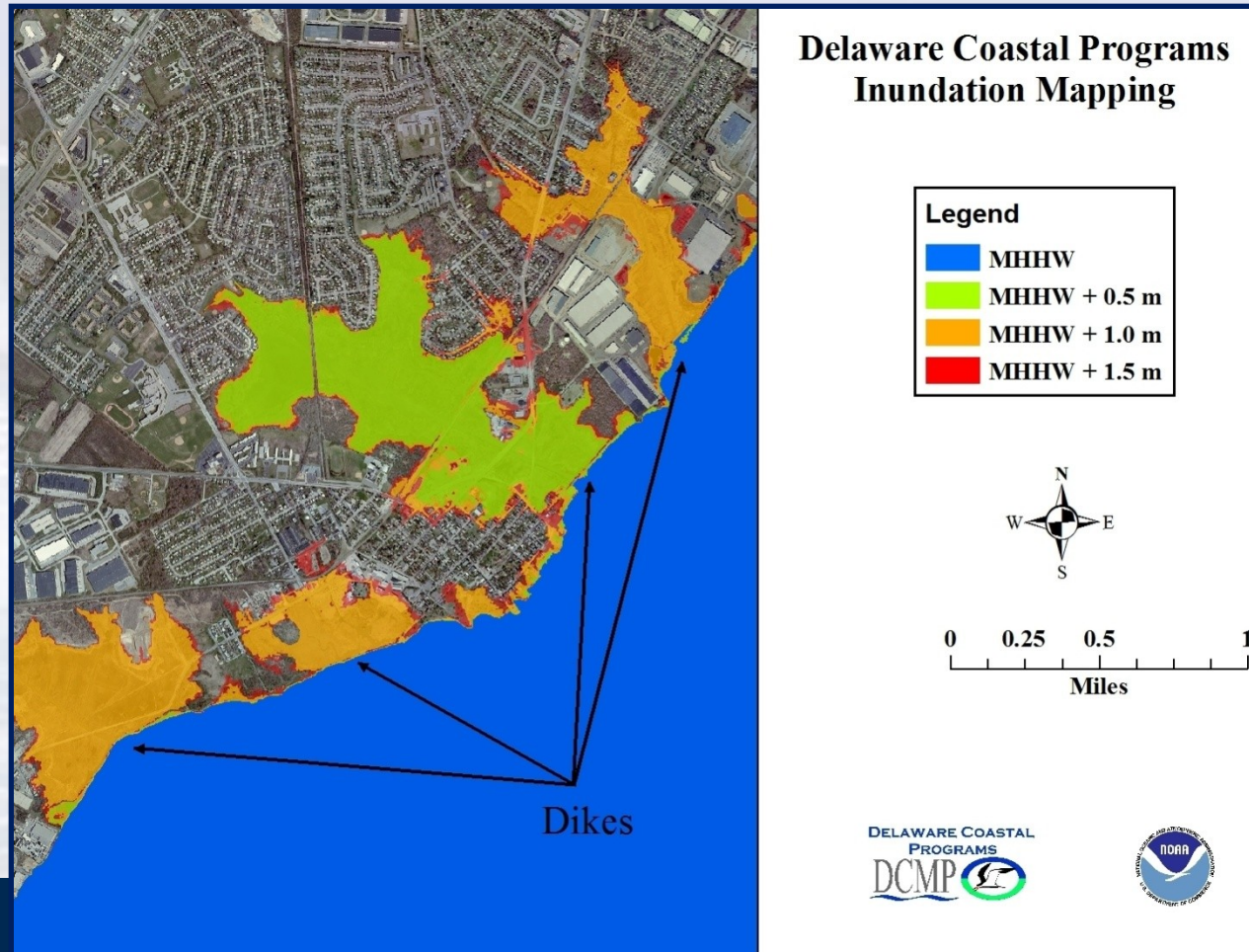
# Bowers Beach Vulnerability





# Coastal Resiliency Action Plans

## City of New Castle





# New Castle Dikes



Level



# Odessa, Delaware



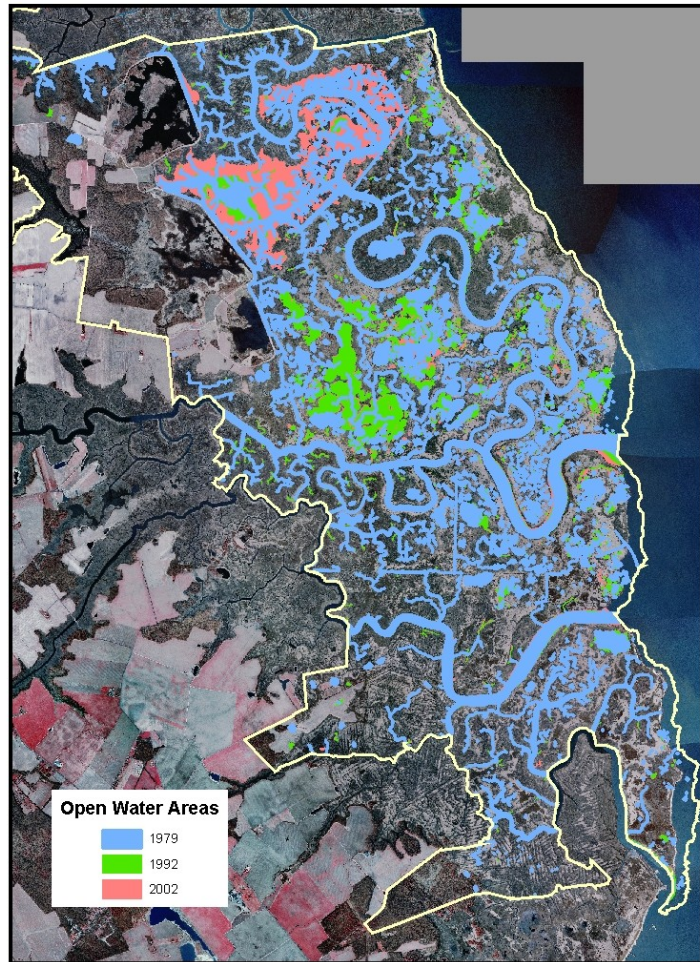
Rt. 9 Bridge/Old Corbitt Road over  
the Appoquinimink River



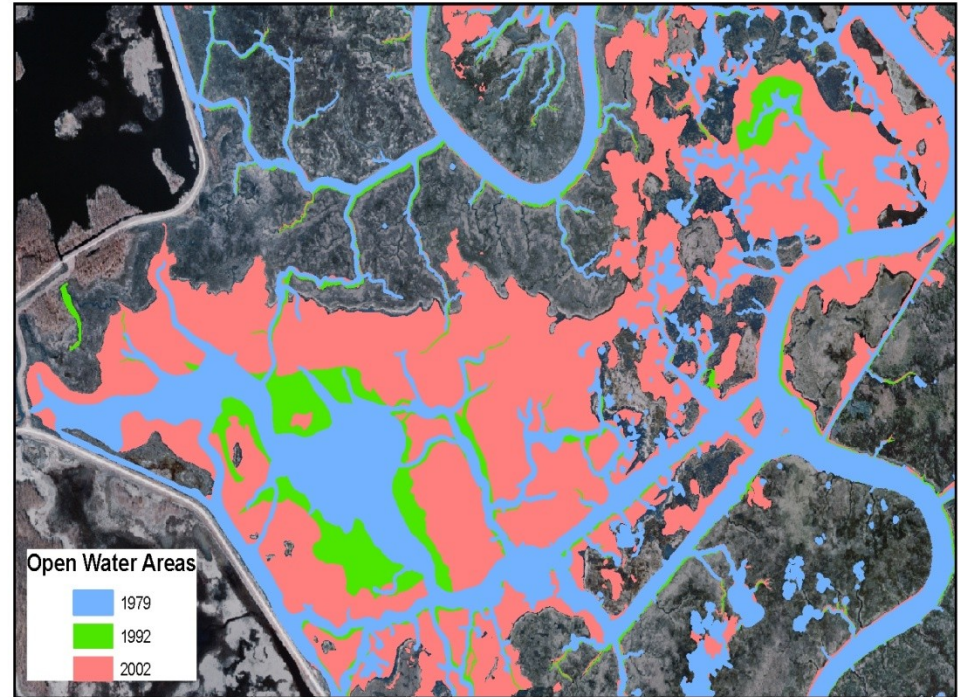
Silver Run Road



# Bombay Hook NWR Marsh Loss 1979-2002



Collins Island - Money Marsh - Leatherbury Flats



Total loss of 1,340 Acres (12%)  
~ 58 Acres per year.



# Prime Hook National Wildlife Refuge Impoundment Management



Sea Level Rise threatens the current methods of managing wetland impoundments

We will need to modify management to be more sustainable under changing coastal conditions.



# Responding to Sea Level Rise

## ■ Sea Level Rise Adaptation:

*“Making changes to the way we plan for the future by incorporating sea level rise considerations into our current decision-making process”*

## ■ Considerations for Decisions

- ✓ What is at risk?
- ✓ What can be protected? At what cost? Who Pays?
- ✓ Where can we let nature take its course?
- ✓ Cultural Consideration  
(The Delaware Way)





# Today's Storm Surge ... Tomorrow's High Tide?

- Sea Level Rise is happening and can be expected to occur faster in the future.
- Delaware is a low lying state that will be significantly impacted by rising tide levels.
- Delawarean's surveyed-
  - 80% think action should be taken to reduce the impacts of sea level rise *before impacts occur*
  - 65% support avoiding building new structures in areas at risk from sea level rise
  - 65% support spending more on public construction projects on structures that could withstand or accommodate SLR



# Questions?



*Delaware's Sea Level Rise Initiative*

